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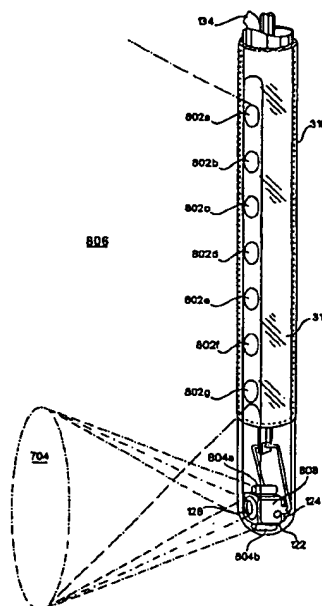
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- (51) International Patent Classification⁷: A61B 1/05 (74) Agent: THOMPSON, Robert, Lee; 19308 Pinecrest Trail., Rogers, AR 72756 (US).
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- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: IMAGING SYSTEM WITH REMOTE CONTROLLED CAMERA



(57) Abstract: A video endoscope comprises a sheath (316) forming a cavity to accommodate an image sensor (124), and the housing (202) adapted to mate with the proximal end of the sheath (316) by means of at least one slot (312) and at least one tab (328) to inhibit the proximal end of the sheath (316) from rotating with respect to the housing (202). A support member (314), which is at least partially disposed within the sheath (316), positions the image sensor (124) within the sheath (316) such that the image sensor is rotatable about at least two axes of rotation with respect to the sheath. The image sensor (124) and at least one light (802, 804) are disposed within the sheath (316), and the at least one light is adapted to generate sufficient heat to prevent condensation from forming on the sheath when the sheath is inserted into a body of a living patient.

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 00/08162

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 A61B1/05

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A61B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 562 602 A (H. YABE ET AL.) 8 October 1996 (1996-10-08) column 24, line 55 - column 25, line 22 column 26, line 8 - line 15 column 27, line 14 - line 28 ---	1-5,8,9
X	US 5 253 638 A (R.A. TAMBURRINO ET AL.) 19 October 1993 (1993-10-19) column 3, line 10 - column 4, line 2 ---	1-7
A	US 4 727 859 A (R.A. LIA) 1 March 1988 (1988-03-01) column 1, line 35 - line 65 column 2, line 47 - column 3, line 9 -----	1-7

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&" document member of the same patent family

Date of the actual completion of the international search

24 August 2000

Date of mailing of the international search report

27. 11. 2000

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RIEB, K

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 00/08162

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-9

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-9

Camera comprising a rigid sheath for accomodating an image sensor and a housing mated to the sheath by means of tabs and slots to prevent mutual rotation.

2. Claims: 10-20,21-25

Camera including a support for the image sensor and a housing with at least one actuator to rotate the image sensor about at least one axis of rotation w.r.t. the sheath, and actuation module for use with the camera.

3. Claims: 26-31

Camera module comprising a module base adapted to be removably mounted, a cable connected to the image sensor and a signal conditioning circuit.

4. Claims: 32-35

Camera sheath comprising at least one light/heat source to prevent condensation (fogging).

5. Claims: 36-52

Bearing ring assembly comprising a plurality of ball bearings.

INTERNATIONAL SEARCH REPORT

information on patent family members

International Application No

PCT/US 00/08162

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5562602 A	08-10-1996	JP 6261856 A JP 6261857 A	20-09-1994 20-09-1994
US 5253638 A	19-10-1993	NONE	
US 4727859 A	01-03-1988	NONE	